TRACKING MOUNT

The obvious solution to store release analysis when motion counts

Many military test ranges worldwide deal with the measuring of position and attitude of objects moving using dedicated tracking mounts which can follow objects at large distances (up to several kilometers). The main feature to be measured for these studies is the 3D position of the object at different times. Using the 3D position data, all kinds of analyses can be performed such as calculating the miss distance between a missile and a target. Several tracking mounts can be used, positioned at different locations. Recording the direction to the object from different angles results in high accuracy 3D positions. To obtain and have a control over this accuracy, TrackEye Tracking Mount module has dedicated sensor validation algorithms which can accept several criteria from the operator. The program tracks objects in images automatically, handles the positions of the tracking mounts, integrate different calibrations and corrections procedures through the reading of metadata or external data provided by sensors, transforms coordinate systems and calculates the position for all objects.

Key benefits

- Easy to use, modular
- Validation of the 3D calculated position
- Customizable calibration procedure
- Air refraction index corrections
- Most accurate solution on the market
- Possibility of creating templates
- Various table & image export formats
- Compatible with radars and optical mounts

From images to results

TrackEye is the market leading motion analysis software and is used as a standard reference in many countries throughout the world. From loading an image sequence, executing the tracking algorithms, applying the chosen analytics and logic to presenting the derived data - TrackEye offers a straightforward workflow. The user interface is fully synchronized and any change of parameters or set-up will directly effect all parts of the tracking session, updating results, graphs and tables.

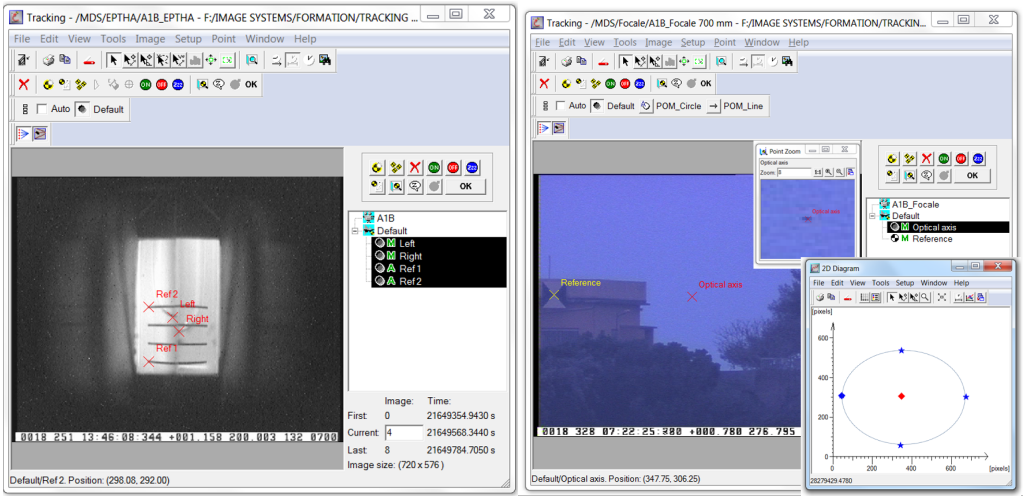
Tracking Mount Projects

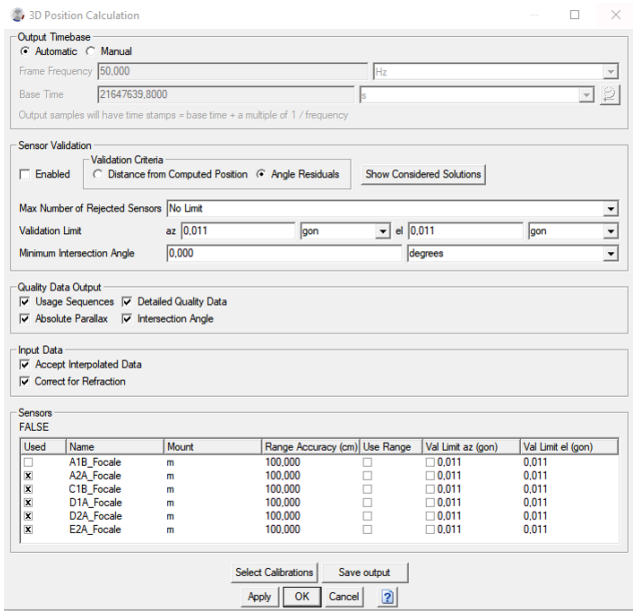
There is a wide variety of tracking mounts and each project is considered as a real collaboration between the customer and Image Systems. The flexibility and reactivity of Image Systems' developer team allow to adapt the TrackEye software through the reading of specific image file formats, the handling of various metadata and data sources provided by mount manufacturers. Image Systems' experience and quality support is a guaranty of accurate calibration and reliable 3D calculations using the tracking mount of your choice.

APPLICATION EXAMPLES

TPCAL Module (Optional)

The TPCAL will use image sequences of terrestrial targets with surveyed earth coordinates to calculate/modify initial calibration parameters such as azimuth and elevation bias, offset relative to true north, offset relative to the local tangent plane of the ellipsoid, sensor elevation bias, skew, physical offsets of the sensors on the mount, focal length and many more. Those offline calibrations will be stored in the sensor individual and can be used in a TPCOR module.





3D position calculation & validation

When using several mounts with a moving object over long distances it is necessary to control that the physical configuration and orientation of the various tracking mounts still allow accurate 3D positioning of the target. The sensor validation module provide the operator with the ability to enter various criterion (intersection angle between mounts, validation limit in azimuth and elevation angles or in distance) to accept 3D calculations only in favourable configurations.
Using those criterions, the software performs a cross validation algorithm using the different sensors available. A table displays the rejected solutions as well as the accepted ones with most sensors involved. Individual criterion can be entered for each sensor.

TECT Module (Optional)

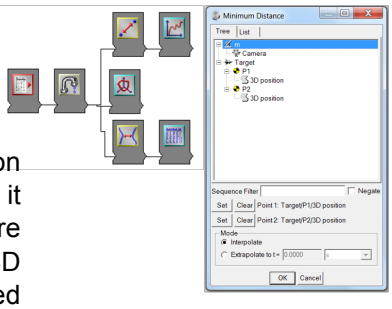
The TECT module allows to convert coordinates to/from different latitude/longitude and local xyz coordinate systems (WGS84, ED50 & NAD72, others on request) and is essential to a tracking mount application since TrackEye internal calculations are always in Cartesian coordinates. Another support function calculates the height above the geoid (equivalent to height above MSL). For lat/long/height or UTM coordinates, the height over the ellipsoid is replaced with height over the geoid. For input data in Cartesian coordinates, the geoid height is output as a separate sequence.

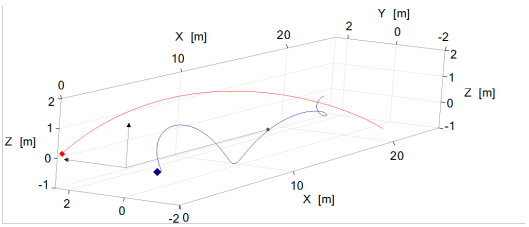
TESAC Module (Optional)

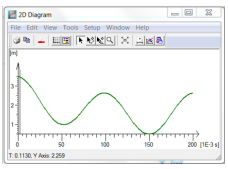
When light passes through layers of air with different pressure and temperature, the path of travel is not a straight line which can cause severe tracking errors. TESAC corrects for atmospheric refraction using a mathematical model supplied by the customer and based on air temperature and pressure changes and refraction range.

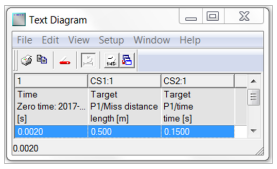
Miss distance feature

When a projectile hits the ground, the hit position can be masked by an explosion which makes it hard to track properly. The miss distance feature allows to extrapolate and predict the 3D coordinates of an object according to its analyzed trajectory. The distance between the 3D surveyed reference target and the object is then calculated and displayed in a table, 2D or 3D diagrams.









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